

**ALBANY RESEARCH CENTER**  
**SAFE OPERATIONS**  
**PROGRAM PLAN AND PROCEDURES**

*October 2, 2002*

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This document has been reviewed and approved by Albany Research Center Management.

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## **ALBANY RESEARCH CENTER SAFE OPERATIONS PROGRAM PLAN AND PROCEDURE**

Albany Research Center's (ARC) Safety Policy is to ensure that ARC activities and operations will protect the safety and health of its workers, the public, and the environment. This Program Plan, which is an integral part of the ARC Integrated Safety Management System (ISMS), is an important component of ARC's Safety Policy implementation strategy.

The first eight sections of this document provide an overview of the Albany Research Center (ARC) Safe Operations Program. Section 9 sets forth the procedure for developing, implementing and maintaining a program for safe operations, including specific requirements for unattended operations and working alone.

### **1. PURPOSE.**

This Program Plan pertains to work or activities performed during non-regular working hours or unattended. The Plan: (1) establishes the general requirements for the safe conduct of operations at ARC; (2) sets forth the responsibilities of key personnel; (3) identifies operations that cannot be unattended and work that cannot be performed alone; (4) provides protocols for ensuring the safe operation of laboratory and process equipment during periods when an operator is not present or is working alone; and (5) establishes requirements for conducting unattended operations.

### **2. CANCELLATION.**

Not Applicable.

### **3. REFERENCES.**

- a. *Albany Research Center Asbestos Management Program Plan and Procedure*, draft, March 30, 2001.
- b. *Albany Research Center Asbestos Operations and Maintenance Program Plan and Procedure*, draft, March 30, 2001.
- c. *Albany Research Center Confined Space Work Procedure*, current version.
- d. *Albany Research Center Facility Safety Analysis and Review System (SARS) Program Plan and Procedure*, draft, December 14, 2001.
- e. *Albany Research Center Fire Protection Procedure*, current version.
- f. *Albany Research Center Hot Work Procedure*, current version.
- g. *Albany Research Center Lock-out/Tag-out Procedure*, current version.
- h. *Albany Research Center Lead Management Program Plan and Procedure*, draft, March 2001.

- i. *Albany Research Center Waste Management Program Plan*, March 2001.
- j. *Albany Research Center Waste Minimization, Pollution Prevention, and Recycling Program Plan and Procedures*, March 2001
- k. *Albany Research Center Waste Storage, Handling and Disposal Program Plan and Procedures*, March 2001.
- l. Dooley, George J., *ARC Unattended Equipment Operation Sign Policy*, June 18, 2001.
- m. **Statutory ES&H Standards:**
  - (1) 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response*.
  - (2) 29 CFR 1910.1200, *Hazard Communication*.
  - (3) 29 CFR 1910.1450, *Laboratory Chemical Handling*.
- n. **Reference ES&H Standards:**
  - (1) *Prudent Practices for Handling Hazardous Chemicals in Laboratories*, National Academy Press, 1981.

#### 4. DEFINITIONS.

- a. **ARC** - Albany Research Center.
- b. **ARD** - Albany Research Center Associate Research Director.
- c. **Area Custodian** - ARC employee in charge of maintenance and proper function of a designated area or piece of equipment. Reports difficulties to the Responsible Custodian (see definition following).
- d. **Facility Custodian** - ARC Associate Research Director responsible for facility maintenance and proper function of facility-wide systems in a building and in areas not covered by Area Custodians.
- e. **“Functional” Laboratory** – Laboratory areas not associated with specific projects. Functional laboratory areas include laboratories dedicated to routine sample analysis as well as more specialized analysis, such as gas chromatography, mass spectrometry, and surface analysis.
- f. **Hazardous Work** – Any work that poses potential risk, if not properly performed, to the safety and health of the worker and the public, or damage risk to property, equipment, or environment.

- g. **High-Temperature Equipment** – Equipment capable of operation at temperatures above ambient through the use of heat sources such as resistance heaters or gas burners, etc.
- h. **Operation** - A set of activities performed at ARC by trained operators to control equipment and material designed to satisfy the ARC mission. An example of a ARC operation is a research test.
- i. **Pressure Vessels** – Vessels or systems designed to operate at or above pressures of 2 atmospheres.
- j. **Responsible Custodian** - The ARC Associate Research Director or authorized designee responsible for assuring adequate maintenance and proper function of a designated area. Appoints Area Custodians to his/her areas of responsibility.
- k. **Unattended Operations** – Those laboratory, process, research or support activities involving instrumentation, equipment, chemical reactions, physical changes, etc. that occur without operational personnel being physically present to monitor such operations.

An unattended operation that is part of a normal unattended operating procedure of long standing, such that the unattended operation is routine and that experience indicates is safe, is excluded from this definition. Examples are refrigeration units for food storage; air compressors that help in providing instrument air to the facilities that operate continuously, and that are routinely maintained and monitored; continuous toxic gas detection units; etc.

- l. **Working Alone** – Performance of any work by an individual who is out of audio or visual range of another individual for more than a few minutes at a time, and no other person present at the facility is aware the individual is working alone.
- m. **Work Area (R&D)** - All work areas where ARC employees carry out research and development activity. These areas include: all laboratories, process engineering areas, storerooms (gas cylinder storage areas, chemical storage areas, or equipment storage areas), technical support areas, fabrication shop, or instrumentation shop.
- n. **Work Area Custodian** - ARC employee responsible for day-to-day activities in their specific (R&D) work area.

## 5. QUALITY CONTROL.

- a. Requests for authorization for unattended operations or working alone will be reviewed by the ARC Safety Officer and approved by the responsible ARC Associate Research Director. Unattended operations of equipment or work alone will not be allowed without a valid authorization posted at the entrance to the laboratory area.
- b. When a specific safety arrangement has been assigned to a work function, the

responsible ARD shall ensure that the employee complies with established procedures. In the event of an accident or incident, ARC procedures on injury, illness, occurrence investigation and reporting shall be followed.

**6. RESPONSIBILITIES.**

a. The **ARC Research Director** shall:

- (1) Ensure that this ARC Safe Operations Program Plan and Procedure is implemented in compliance with all regulatory requirements.
- (2) Ensure that adequate funding, appropriately trained personnel, and other resources are provided to maintain the Program.

b. The **ARC Associate Research Directors** shall:

- (1) Have overall responsibility for the safe operations in the laboratories, facilities, and work areas under their supervision
- (2) Ensure that workers understand and follow the policies, procedures, and guidelines regarding unattended operations of laboratory and process equipment; and for working alone.
- (3) In conjunction with the researcher(s), Responsible Custodian, or Area Custodian, be responsible for identifying equipment requiring authorization for unattended operations.
- (4) Ensure that workers receive appropriate training regarding procedures for unattended operations of equipment.
- (5) Schedule and conduct periodic safety inspections of work areas to ensure compliance with this procedure.
- (6) Determine the type of arrangement or safety precautions suitable for a specific job to be undertaken by a lone worker.
- (7) In conjunction with ARC Safety Officer, classify hazardous jobs that are not to be undertaken by lone workers and update procedures.
- (8) Issue authorizations for approved unattended operation of laboratory and process equipment

c. The **ES&H Manager** shall:

- (1) Assist the ARD or his/her designee to assess requests for authorizations for approved unattended operations, and provide with recommendations to ensure safe operation of laboratory equipment.

- (2) Discuss with the responsible ARD or his/her authorized designee any clarifications or recommendations, if necessary, pertaining to the operations.
  - (3) Schedule and conduct periodic safety inspections of work areas to ensure compliance with this procedure.
- d. The **ARC Safety Officer** shall:
  - (1) Review documentation provided for an unattended operation (this may be in the form of a review of an ES&H Permit Request or associated SARS Safety Analysis).
- e. The **ARC Safety Committee** shall:
  - (1) Assist in periodic safety inspections as requested.
  - (2) Assist in assessing requests for authorizations for approved unattended operations, and shall make recommendations to ensure safe operations of process equipment.
- f. **ARC Federal and Contractor Employees** shall:
  - (1) Understand and adhere to this procedure.
  - (2) Immediately inform their ARD, the ARC ES&H Manager, the ARC Safety Officer or the ARC Security Officer of any hazard, or hazardous working condition that may develop or has preexisted in their work assignments.
  - (3) Inform their ARD of any health problem or physical defect that may adversely affect their job performance and possibly preclude their working alone.
- g. **Responsible Custodians and Area Custodians** shall:
  - (1) Identify equipment requiring authorization for approved unattended operations and for obtaining the required authorization by providing necessary documentation (e.g., ES&H Permit Requests, emergency procedures and notification).
  - (2) Ensure that unattended operations can occur in a safe manner
  - (3) Provide ample notification of operations to all persons directly or indirectly related to the approved unattended operations (e.g., site security, night watchmen, support contractors working in an area adjacent to the unattended operation, etc.).
  - (4) Post laboratory areas where approved unattended operations are in progress,



- (5) Ensure that all project personnel receive appropriate training in unattended operations procedures.

## **7. TRAINING REQUIREMENTS.**

All individuals affected by this policy are required to read this procedure and any subsequent revision and be cognizant of its contents and directions.

Personnel responsible for monitoring site security and safety during non-working hours shall be trained (see 29 CFR 1910.120) in location of emergency shutdown systems (such as water shutoff and circuit breaker boxes) and shutdown procedures in areas where approved unattended operations of equipment are planned or in progress.

An employee working alone must have sufficient knowledge, training, and experience in the assigned area so that the work function can be conducted in a safe and sound manner. Before an employee becomes involved in work which is new to him or her, or which is known to contain a hazard, the responsible ARD shall determine the type of training necessary and ensure the training requirements are satisfied before the employee is allowed to work alone.

## **8. DOCUMENT CONTROL.**

Request for authorization for approved unattended operations of equipment will be maintained in the ES&H Records Center. All supporting documentation including recommendations by the ASO or the ARC Safety Committee, actions taken to comply with these recommendations, copies of the authorization for unattended operations, and reports of semiannual inspections will also be maintained in these files.

Individuals are required to complete and return to their supervisors a procedure cognizance verification form after training in this procedure.

Personnel with site security responsibilities shall complete and return to the ARC ES&H Manager certification of training on the location of emergency shutdown systems and procedures.

The responsible ARD shall issue Construction and Operating Permits that clearly authorize "working alone" operations.

This Program Plan and Procedure will be reviewed at least annually by the ES&H Manager for appropriate changes and updated (as a minimum) every three (3) years or whenever dictated by procedure, regulatory, or personnel changes.

## **9. PROCEDURE.**

### **a. Requirements for Unattended Operations**

- (1) The responsible ARD or his/her authorized designee will determine which equipment requires authorization prior to approved unattended operation.
- (2) The responsible ARD or his/her authorized designee will prepare a request

for authorization of unattended operations of equipment which will include a list of specific equipment covered and the associated safety features.

- (3) If the operation is to be retrofitted with the unattended mode, then an ES&H Permit Request-Modification should be filed with the ES&H Manager. If a SARS was previously conducted on the operation, then an updated Safety Analysis should be appended.
- (4) The updated Safety Analysis should contain specific applicable measures that address the safety criteria for approved unattended operation (e.g., safety pressure devices, ventilation, temperature overshoot mechanisms, liquid level sensors, gas sensors and alarms, equipment alarms)
- (5) In the Safety Analysis, emergency procedures during the unattended operation are to be addressed and these documents will be posted on the units. The phone numbers for the responsible ARD and other pertinent operating personnel will be listed on the emergency procedure so that these people may be contacted in the event of an emergency. The unit should be designed such that the unit automatically shuts down during unattended operation if a potential hazardous condition arises within the system.
- (6) The responsible ARD will issue an authorization for approved unattended operation of the specified equipment.
- (7) Written authorization(s) for approved unattended operation must be renewed on an annual basis, or whenever significant changes to the equipment have been made.
- (8) All systems operating in an unattended fashion must have an easily accessible single emergency button (or switch) that will readily put the equipment into a safe, orderly shutdown condition.
- (9) All areas where approved unattended operations will be conducted must be posted with appropriate signs indicating the nature of the operation, the name of the responsible person, an emergency response phone number, and the location of emergency shutdown systems (e.g., circuit breakers, water and gas shutoff valves).
- (10) The ARC Security Officer shall be notified in advance of all approved unattended operations. The Security Officer shall be trained in emergency shutdown procedures (that require 8 hours training per 29 CFR 1910.120) for each area in which approved unattended operations are in progress.

**b. Requirements for Working Alone**

- (1) The responsible ARD will evaluate all operations before an employee works alone.
- (2) Working alone shall not be permitted for certain hazardous work activities. These include but are not limited to:
  - Work with toxic, corrosive, or flammable substances.
  - Work with high pressure or high temperature systems.
  - Work with cryogenic materials.
  - Confined space operations.
  - Welding or any open flame, open arc operations.
  - Energized electrical equipment, or other operations that require buddy system.
  - Unguarded operating equipment.
  - Operations at elevated locations.
- (3) Under normal working conditions only non-hazardous work may be undertaken by a worker who is alone in the work area. Non-hazardous work functions include but are not limited to:
  - Custodial job functions.
  - Security and utility monitor functions.
  - Office and administrative work.
  - Long standing, routine operations that experience indicates is safe.
- (4) Outside of normal working conditions or regular working hours, arrangements should be made between individuals working alone in separate areas to cross-check periodically. Alternatively, personnel may be asked to check on the lone worker either directly or by phone.
- (5) Under unusual conditions, special rules may be necessary. The responsible ARD, in conjunction with the ARC Safety Officer and according to ARC SARS procedures, has the responsibility for determining whether the work requires any special safety precaution.

**10. APPENDICES.**

**10.1 Unattended Equipment Operation Sign**

**10.2 ARC Safety and Health Points Of Contact**

# UNATTENDED OPERATING SIGN

\_\_\_\_\_ is operating this\_\_\_\_\_.

Comments or precautions:

In case of an emergency call:

Date:\_\_\_\_\_